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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,845	02/20/2004	Toshihiro Matsumoto	70365-011	1656

7590 07/18/2007  
MCDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

MAIL DATE	DELIVERY MODE
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07/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/781,845

Applicant(s)

MATSUMOTO ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 and 16-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/26/04, 6/2/06, 4-5-07
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: IDS 4/5/07.

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## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statements (IDSs) submitted on 2/20/04, 6/2/07 and 4/5/07 have been considered by the examiner.

### ***Election/Restrictions***

Applicant's election of Group I in the reply filed on 4/5/07 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claims Analysis***

The claimed invention is directed toward a fuel cell stack, not a method of operating a fuel cell stack. Limitations regarding a method of operating are not given patentable weight unless such limitations impart structure to the claimed fuel cell stack.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The claim recites “a plurality of separators disposed between a plurality of MEAs”, which is indefinite. The specification teaches a single MEA located between a pair of separators.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 7, 8 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Skala et al., US 6,911,277.

Skala is directed toward fuel cell systems, and more particularly, to a device and method to expand an operating range of a fuel cell stack (1:8-10). Skala arranges portions of a fuel cell stack in series and allows the stack flow paths to be reconfigured dependent on flow throughput such that pressure drop remains reasonable while providing sufficient velocities and reactant concentrations at each cell. An array of valves are provided inside the fuel cell stack anode and/or cathode manifolds that open and close in a way the causes the respective gas flow paths through the cells of the stack to change as the throughput of the stack changes (1:63-2:5). The stack 10 includes a plurality of membrane electrode assemblies (MEAs) 20 each disposed between a plurality of bipolar plates 22. As in known in the art, the stack 10 also includes a plurality of gas distribution layers, a plurality of anode manifolds, a plurality of cathode manifolds, a plurality of coolant manifolds, and upper and lower end plates, all arranged in a stacked relation (2:63-3:8). The bipolar plates 22 define passages for the reactant gases to be

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distributed over the face of the corresponding anode and cathode catalyst layers of the MEA (2:14-16). Rotary sector valves 40,42 are capable of altering the flow path configuration through the fuel cell stack (3:25-42). Changing the flow path configuration with the stack throughput improves the operating range by keeping gas velocities sufficiently high to keep the channels clear of water (4:11-14). The manifold system of the fuel cell stack includes a flow control mechanism that is adjustable to provide alternative flow path arrangements through the plurality of reactant gas passages. The alternative flow path arrangements include the flow control mechanism connecting the plurality of reactant gas passages in differing parallel and series flow connections in which a first subset of said plurality of reactant gas passages are connected to the manifold system for parallel flow relative to one another and a second subset of the plurality of reactant gas passages are connected to the manifold system for parallel flow relative to one another and are connected in series flow relationship to the first subset such that said flow control mechanism is adjustable to change with of said plurality of reactant gas passages are connected in parallel flow relationship and which subsets are connected in series flow relationship (claim 1). Note the bipolar plates 22 have at least two inlet manifolds, one for the fuel gas and one for the oxidant gas. Thus the claims are anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 3-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al., US 6,911,277.

See discussion of Skala above regarding claims 1 and 2. Skala does not explicitly teach the valve/manifold structure of pending claim 3.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Skala teaches rotary sector valves capable of altering the flow path configuration through the fuel cell stack. Changing the flow path configuration with the stack throughput improves the operating range by keeping gas velocities sufficiently high to keep the channels clear of water. One of skill would have been motivated to modify the valve structure of Skala to improve the operating range of the fuel cell stack and control the gas velocities in each channel. The manifold system of the fuel cell stack includes a flow control mechanism that is adjustable to provide alternative flow path arrangements through the plurality of reactant gas passages.

### ***Conclusion***

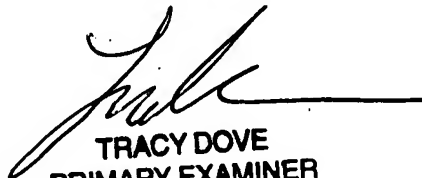
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 9, 2007



**TRACY DOVE**  
**PRIMARY EXAMINER**